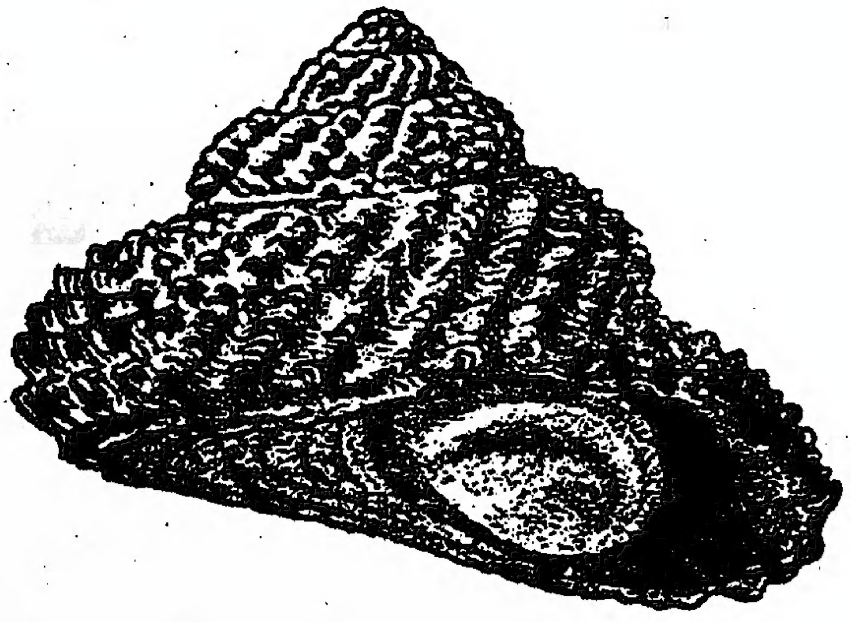
Alexander Library

COOKIA



Journal of the Wellington Shell Club

New Zealand

Vol 4 No 2

MARCH 1981

BE A CONCHOLOGIST AND LIVE TO A RIPE OLD AGE

We tender a salute to Dr A W B Powell of Auckland who reaches the grand old age of 80 this year.

We need not here give an account of his work in conchology - to all New Zealand shell collectors it speaks for itself.

When we look around the personalities who have contributed to our science it becomes apparent that living to a ripe old age is not uncommon among them. Perhaps there is a "something" about conchology which tends to produce long life. Is it a specially soothing study, without rush and bustle, without confrontations and hazards, which enables its participants to continue smoothly into old age?

Let's look firstly at some of the folk involved in Australasian conchology, and we will no doubt conclude the answer to the above question is .... yes.

At the head of the list is that grand old man Tom Iredale who reached the age of 92. Not to be regarded lightly however are:

J Brazier	88
J Marwick	87
J Verco	82
E Ashby	80
J C Cox	79
H Suter	77
W R B Oliver	74

Mere boys in the field were:

F W Hutton	69
W Swainson	69
J E Tenison-Wood	66
C Hedley	64

But, looking further afield, there is a very long list of scientists of note in the history of conchology who lived on into their 80s. Here we can list but a few of them:

A E Salisbury	88
A E Verrill	88
L Spengler	87
E R Sykes	87
F P Jousseaume	86
T M A Monterosato	86
P Dautzenberg	86
J B P A M Lamarck	85
H F Link	84
J C Melvill	84
F P Marrat	84
W Wood	83
J C Jay	83
C H Jacquinot	83
P Pelseneer	82
A G Moltke	82
L C Kiener	82
W H Dall	82

But wait .... these are not the real "Old Timers". A few conchologists have reached their 90s:

R A Philippi	96
D Thaanum	96
H A Pilsbry	95
I Lea	94
H H Bloomer	94
C de la Torre	92
G O Sars	90
J R de B Tomlin	90

I have not found a record of anyone making the full century.

Although he was not strictly a conchologist, Sir Hans Sloane is worthy of inclusion in the list. His natural history collections, including many shells, formed the nucleus of the British Museum. He lived to be 93.

So .... students of conchology keep up your good work, and you may join the ranks of the aged.

We all know that money won't buy health or long life, but perhaps Robert Louis Stevenson had the key to the recipe when he wrote "It is perhaps a more fortunate destiny to have a taste for collecting shells than to be born a millionaire". Although he did collect shells at Samoa, he, poor fellow, died at the age of 44.

Editor's Note: The ages quoted in this article may be one year over-stated as in some cases the only data available has been the year of birth and of death.

* * *

SOME NOMENCLATURAL CHANGES IN NEW ZEALAND ARCHITECTONICIDAE AND LIST OF AUSTRALIAN SPECIES

A paper by T A Garrard, published subsequent to the manuscript of Powell's "New Zealand Mollusca" (1979) going to press, has changed the nomenclature of some species which occur on both sides of the Tasman.

This paper, "Revision of Australian Architectonicidae" (Records of Australian Museum Vol 31 Sept 1977) describes and illustrates all known living and fossil species of the family in Australia, and adds several new species to the fauna. Eight species are recorded as being in both Australia and New Zealand. The following is a list of the species now recognised as living in Australia. Those marked with an asterisk (*) also occur in New Zealand.

Architectonica	(Architectonica)	perspectiva (Linne 1758)
		maxima (Philippi 1848)
		modesta (Philippi 1848)
		perdix (Hinds 1844)
		reevei (Hanley 1862) *
	(Discotectonica)	acutissima (Sowerby 1914)
		kuroharai Kuroda & Habe 1961
	(Solatisonax)	injussa (Iredale 1931)
		atkinsoni (Smith 1891)
Philippia	(Philippia)	lutea (Lamarck 1822) *
	(Psilaxis)	oxytropis Adams 1854 *
		radiata (Roding 1798) *
Heliacus	(Heliacus)	cerdaleus ponderi Garrard 1977
		enoshimensis (Melvill 1891)
		hedleyi Garrard 1977
		madurensis (Schepman 1909)
		mighelsi (Philippi 1853)
		stramineus (Gmelin 1791)
		trochoides (Deshayes 1830)
		variegatus (Gmelin 1791)
	(Torinista)	dorsuosus (Hinds 1844)
		concavus (Thiele 1918)
		corallinus Garrard 1977
		costatus (Schepman 1899) *
		delectabilis (Melvill 1893)
		fenestratus (Hinds 1844)
		fulvus (Hinds 1844)
		cf. implexus (Mighels 1845)
		infundibuliformis (Gmelin 1791)
	(Awarua)	amoenus (Murdoch & Suter)
	(Claraxis)	asperus (Hinds 1844) *
		aequatorialis (Thiele 1925)
		colmani Garrard 1977
		foveolatus (Tate 1893)
		fragilis (Hinds 1844)

Pseudomalaxis (Pseudomalaxis) nobilis meridionalis (Hedley 1903) *
thetidis (Garrard 1977)

(Spirolaxis) rotulacatherinea (Melvill & Standen 1903)

Of the eight species shown as living in New Zealand ...

Four species have not undergone any nomenclatural change. These are: Architectonica reevei, Philippia lutea, oxytropis, and radiata

The species Powell recorded as Claraxis illustris Iredale 1936 is listed under the earlier name of Heliacus asperus (Hinds 1844), and illustris is treated as a synonym of this species.

The species Powell recorded as Mangonuia amoena is referred to as Heliacus (Awarua) amoenus.

The species Powell recorded as Mangonuia bollonsi Mestayer 1930 is shown to be synonymous with Pseudomalaxis nobilis meridionalis.

The genus Mangonuia is reduced to a synonym of Pseudomalaxis Fischer 1885, and Awarua, which Powell treated as a synonym of Mangonuia is regarded as a valid subgenus of Heliacus.

An addition to the New Zealand fauna is Heliacus (Torinista) costata. Two specimens of this species were collected in deep water (803 metres) off Three Kings Islands.

* * *

THE LIVING STRUTHIOLARIIDAE

by W J Paul

This family, commonly called "ostrich foot shells" is one of the smallest of the families of living Gastropoda, having only four species -- two in New Zealand, one in Australia, and one in the sub-Antarctic. It is one of the three families comprising the super-family Strombacea. The other two being ... Strombidae: - a large family of numerous genera distributed round the world in tropical and sub-tropical areas; and Aporrhaidae (commonly called "pelican foot shells"), with only a few species in the Mediterranean and North Atlantic.

In New Zealand the family has a long fossil lineage back to the Paleocene, and many fossil species have been described. Of the several genera recognised in the family only Struthiolaria is represented in the living fauna.

Struthiolaria Lamarck 1816

Type species: S. nodulosa Lamarck 1816

Although Lamarck applied his name to the shell, it had in fact been earlier named Buccinum papulosa by Thomas Martyn in 1784. It was therefore necessary to revert to the use of Martyn's name. Although Martyn's names have been ruled as invalid by the International Commission on Zoological Nomenclature an exception was made in respect of certain well known shells in New Zealand, one of which is Struthiolaria papulosa.

Struthiolaria papulosa Martyn 1784 is a well known shell to all New Zealand shell collectors, and a description is not necessary here. This is an extremely variable shell, distributed round both main islands and at Stewart Island. It does not occur, however, at the Chathams. At the southern extremity of its range a larger form exists on which the whorls, particularly the body whorl, are smooth and the nodules less prominent or almost missing. This variant had been given the sub-specific name gigas by Sowerby in 1842. It does however merge with the typical form which invalidates its acceptance as a sub-species. At Mercury Bay there is quite commonly found a variant on which the row of nodules on the shoulder of the body whorl is doubled.

Suter, in his Manual (Page 275), remarks of papulosa "also recorded from Seychelles". This is a rather surprising statement ... a New Zealand species at tropical islands five degrees south of the equator in the Indian Ocean !!! Surely not.

To the Maoris, Struthiolaria papulosa was good food, and the peristome, or margin of the aperture, was cut away from the shell and strung on a flax fibre string to be worn as a necklace.

The second New Zealand species has been sub-generically separated from Struthiolaria s.s. into the sub-genus Pelicaria. The lineages of Pelicaria and Struthiolaria s.s. have run separately since the Miocene. Pelicaria was erected as a separate genus by Gray in 1857. Several fossil species are recorded but only one, vermis Martyn 1784, occurs in the living fauna. Here again the shell is so well known to local collectors that full description is unnecessary.

The species is widely distributed round New Zealand, but is not at the Chathams.

In 1841 Lesson applied the name tricarinata to a slightly differently sculptured form, but this merges with the typical species and is not a stable sub-species.

In 1970 Neef named five new sub-species as follows: flemingi, grahami, powelli, bradleyi, and vellai. In his "New Zealand Mollusca" (1979) Powell has accepted flemingi as a valid sub-species, and rejected the others. However, none of these names meet the requirements of a valid sub-species as they do not have separable geographic areas of distribution, and the typical species occurs throughout the same areas as these local variants.

Tylospira Harris 1897

Type species T. scutulata Gmelin 1791

The Australian representation of the family consists of the single species Tylospira scutulata Gmelin, found only along the southern coast of New South Wales.

The shell is of very similar shape and size to Struthiolaria vermis. It has a polished surface and a highly polished porcellaneous columella and parietal wall. As described above, the area of distribution is quite small. It does not extend northwards into Queensland or south to Victoria. Although it is not infrequently washed ashore, live specimens can be obtained only by dredging, in depths varying from eight to thirty metres.

Perissodonta Martens 1878

This genus, which is considered to be ancestral to Struthiolaria, is represented by fossil species in the Paleocene of New Zealand. Fossil species also occur in the early Tertiary of South America. The genus is still represented in the living fauna by one species, Periossodonta mirabilis (E. Smith 1875), which lives at South Georgia and Kerguelen. It is a scarce shell, seldom seen in collections, on account of the isolation of its area of distribution.

To summarise ... the Struthiolariidae, a widely distributed family throughout the Tertiary (over 40 fossil species in New Zealand) has now only four living representatives:

Struthiolaria papulosa (Martyn 1784) - in New Zealand, except the Chathams

Struthiolaria (Pelicaria) vermis (Martyn 1784) - in New Zealand, except the Chathams.

Tylospira scutulata (Gmelin 1791) - off-shore, southern coast on New South Wales.

Perissodonta mirabilis (E. Smith 1875) - South Georgia and Kerguelen.

* * *

NEW ZEALAND SPECIES OF AUSTROMITRA

Since the publication of Powell's "New Zealand Mollusca" (1979) a revision of the New Zealand species of the genus Austromitra has been written by W O Cernohorsky.

In Powell's volume this genus is recorded in a subfamily of the family Mitridae ... the Vexillinae. A separate family, the Vexillidae, was erected by Thiele in 1929 for the reception of the genus Vexillum and its relations. This family name has however to give way to the earlier name Costellariidae Macdonald 1860. The distinction between the Mitridae and Costellariidae is: in the former the interior of the aperture is always smooth but in the latter is lirate.

Accordingly the genus Austromitra is now included in the family Costellariidae.

Cernohorsky has recognised five valid living species in New Zealand. These are:

Austromitra rubiginosa (Hutton 1873)
" lawsi Finlay 1930
" angulata (Suter 1908)
" planta (Hutton 1885)
" zafra Powell 1952

In the cases of the species lawsi and zafra no synonymous names have been created by other authors; so these recognised species are just as described in Powell's book.

The species listed by Powell as erecta has been synonymised with rubiginosa. The species angulata and planta which Powell had synonymised with rubiginosa have been now treated as valid species.

For details of this rather complex rearrangement of species and their synonymies readers are referred to:

"Revision of the Australian and New Zealand Tertiary and Recent Temperate Species of the Family Costellariidae (Mollusca:Gastropoda)" by W O Cernohorsky. Records of Auckland Institute and Museum Vol 16 : 109-169. January 1980.

* * *

SHELLS COLLECTED AT MAHIA PENINSULA, JANUARY 1981

by Mary Wotton

Opoutama Beach

This is a long sandy beach with rocks at the western end by the river mouth. These had the usual limpets and littorina species. All other shells collected here were wash-ups. On most days, over a two week period, the beach was clean except for single valves of Diplodonta striatula and some other small bivalves.

The shells in the following list were all collected on the same day:

Tugali suteri (Thiele 1916)
Radiacmea inconspicua (Gray 1843)
Cellana flava (Hutton 1873)
Trochus viridis (Gmelin 1791)
Diloma subrostrata (Gray 1835)
Cantharidella tesselata (A Adams 1851)
Maurea pellucida (Valenciebbes 1846)
Maurea punctulata (Martyn 1784)
Maurea tigris (Gmelin 1791) (damaged)
Maoricolpus roseus (Quoy & Gaimard 1834)
Sigapatella novaezelandiae Lesson 1831
(all the Sigapatella were oval shaped instead of the usual round)
Maoricrypta monoxyla (Lesson 1831)
Argobuccinum tumidum (Dunker 1862)
Poirieria zelandica (Quoy & Gaimard 1833)
Austrofusus glans (Roeding 1798)
Cominella adspersa (Bruguiere 1789)
Amalda australis (Sowerby 1830)
Siphonaria zelandica (Quoy & Gaimard 1833)

Barbatia novaezealandiae (Smith 1915)
Chlamys zelandiae (Gray 1843)
Anomia trigonopsis Hutton 1877
Diplodonta striatula (Finlay 1927)
Borniola reniformis (Suter 1908)
Dosinia anus (Philippi 1848)
Notirus reflexus (Gray 1843)
Tellina gaimardi (Iredale 1915)
Tellina spenceri (Suter 1907)
Zearcopagia disculus (Deshayes 1855)
Soletellina nitida (Gray 1843)
Myadora striata (Quoy & Gaimard 1835)
Spisula aequilateralis (Deshayes 1854)
Paphies subtriangulata (Wood 1828)
Paphies australia (Gmelin 1791)

Cemetery Point

This area was good for shell-sand. Chitons were abundant on the rock platforms and many of them appeared to be "overcome with the heat" when exposed at low tide, as several were noticed upside down floating in the pools. Only two species were collected here on rocks at high tide level.

Cellana flava (Hutton 1873)
Notoacmea pileopsis (Quoy & Gaimard 1834)

Mahunga Beach

Shells were collected here from the rock pools among the huge boulders at one end of the sandy beach.

Sypharochiton sinclairi (Gray 1843)
Amaurochiton glaucus (Gray 1828)
Ischnochiton maorianus Iredale 1914
Scutus breviculus (Blainville 1817)
Patelloida corticata (Hutton 1880) (dead shell)
Notoacmea daedala (Suter 1907)
Cellana radians (Gmelin 1791)
Cellana flava (Hutton 1873)
Melagraphia aethiops (Gmelin 1791)
Diloma bicanaliculata (Dunker 1844)
Nerita atramentosa Reeve 1853
Lepsiella scobina (Quoy & Gaimard 1833)
Struthiolaria papulosa (Martyn 1784)
Xenophalium pyrum (Lamarck 1822)
Cominella virgata H & A Adams 1853
Epitonium sp. badly damaged, probably
Cirsostrema zelebori (Dunker 1866)

Oraka Beach

Dead shells only were collected here, except Cellana radians, which were taken alive.

Haliotis australis Gmelin 1791
Cellana radians (Gmelin 1791)
Umbonium zealandicum (Hombron & Jacquinot 1855)
Cookia sulcata (Gmelin 1791)
Chione stutchbutyi (Wood 1828)
Mactra discors Gray 1837
Anchomasa similis (Gray 1835)
Pholadidea spathulata (Sowerby 1850)

Rock Platforms

These extend out from the shore between Cemetery Point and Oraka Beach but we were only able to cover the area between Mahia village and just south of Oraka. As the tide comes right in to the foot of the cliffs nearly all the way along this stretch, it can be visited only at low tide. All the shells collected were in the channels among the rock platforms.

Trochus viridis (Gmelin 1791)
Micrelenchus dilatatus (Sowerby 1870)
Cominella maculosa (Martyn 1784)
Cominella virgata H & A Adams 1853)
Penion sulcatus (Lamarck 1816)

* * *

FRESH-WATER SHELL COLLECTING ABOUT WELLINGTON

Not all shell collectors are interested in fresh-water shells, and New Zealand has only a small number of species to offer. However, a quite worthwhile collection can be made in the Wellington district. The following notes will act as some guidance to those interested.

Makara Stream ... Potamopyrgus are plentiful a short distance up from the mouth of the stream. Further up, Hyridella can be obtained in muddy bottom areas.

Wainuiomata River ... Potamopyrgus in plenty, Melanopsis is fairly common in some reaches of the river.

Butterfly Creek ... In the bush area behind Eastbourne the fresh-water limpet, Latia, has been collected. Downstream there are Potamopyrgus.

Karori Stream ... About half a mile downstream from Karori Park Physastra is fairly plentiful.

Pond in Percy Scenic Reserve, Petone ... Planorbis can be found here ... in any pond containing water-lilies it is worthwhile looking on the backs of the lily leaves for Planorbis.

Stream at Hongoeka Bay ... Upstream a hundred yards from the beach, Hyridella can be found.

Lake Wairarapa ... Hyridella is plentiful ... often quantities of dead shells are washed up along the western side of the lake.

Horokiri Stream ... (running into the north end of Porirua Harbour), Potamopyrgus in the lower part of the stream.

All small streams in the district are worth examining for Potamopyrgus. The species P. antipodarum is extremely variable, and an interesting collection of varying forms of the species both with and without bristles can be made.

* * *

A HOLIDAY IN NELSON AND COLLINGWOOD

by Jill Burnet

This summer I attended a Scottish Country Dancing Seminar in Nelson, and, of course, went with the intention of collecting shells as well as dancing. I spent a very hot afternoon at Tahunanui, and walked the length of the beach trying to collect a sample of every different shell I saw. To my pleasure, the school organised a trip to Rabbit Island. The two hours we spent there were not nearly long enough to explore the eleven kilometres of sandy beach, as well as have a quick swim. Both Rabbit Island and Tahunanui are good swimming beaches and were crowded when I visited them, so collecting conditions were not ideal. Lack of public transport prevented me from visiting the many other beaches in the Nelson area. However, I was able to stop for a few hours at Motueka, on my way to Collingwood. Unfortunately the tide was high and there was practically no beach at all when I arrived, and although it receded exposing rocks covered with periwinkles, I did not collect much there. Nor did I have time to explore what appeared to be a sand-bar enclosing most of the bay. For the rest of my holiday I was based in Collingwood, which is at the mouth of the Aorere River. Collingwood, and the beaches to the west of it, seem to be very tidal. Shell collecting there is best done at low tide, when the sea recedes for such a considerable distance that swimming is not practical. This is the best time for bird-watching also, and herons, shags, pied stilts, black swans, and terns can all be seen on the mud flats.

A trip on a small fishing boat proved interesting as numbers of volutes (Alcithoe arabica) were brought up alive in the fishing nets just off shore, but I did not find any dead shells washed up on the beach. A major attraction at Collingwood is of course the trip to Farewell Spit. This trip takes five hours altogether at low tide. The vehicles drive along the outer edge of the Spit to the lightouse, and there are some stops on the beach as well as at the lighthouse. I found very few shells on the shore-line, but, surprisingly, a low-lying area, the site of an old shipwreck, a little further inland, which apparently fills with water at high tide, yielded more shells. I collected quite a few helmet shells there.

The main bird colonies are on the inland side of the Spit, but we did see some oyster catchers and terns. Better bird watching, swimming and shell collecting however can be had at Parapara. The guide book entry for Parapara says "coloured stones and interesting shells". As Parapara is only about five miles to the east of Collingwood, I was able to spend a whole day there. Like Collingwood, Parapara has a river with a tidal inlet and a sand spit. The sand spit was the territory of a flock of oyster catchers and godwits. In the other direction, the beach ended in a rocky promontory. Beyond that there was another beach and a whole series of little bays with sandy beaches. I collected on an incoming tide which literally washed the shells up to my feet. As can be seen from the following table listing the species of shells I found at the beaches I visited, Parapara yielded a good variety of species, although nothing spectacular.

Land snail enthusiasts may be interested to know that I found a few Paryphanta shells washed up on the beaches. The Aorere River yielded some tiny snails living under stones near the edge of the water, as well as a few flakes of gold.

The table which follows lists all the species of shells I collected, the collection dates being:

1 9 8 1

Rabbit Island 4 January, Tahunanui 5 January,
Motueka 8 January, Collingwood 9 January,
Parapara 11 January, Farewell Spit 12 January

A single asterisk indicates that the species was collected at the place named. A double asterisk indicates that the species was found to be common there, and a triple asterisk, that it was there in large numbers.

Gastropods	Rabbit Island	Tahuna-nui	Motueka	Colling-wood	Parapara	Farewell Spit
Haliotis iris					*	*
Cellana radians					*	
Cellana stellifera					*	
Notoacmea helmsi	*					
Notoacmea parviconoidea			*			
Trochus tiaratus	*	*			*	
Melagraphia aethiops	*	*	*	*	*	*
Diloma nigerrima						*
Diloma subrostrata		*			*	
Micrelenchus sanguineus		*			*	
Micrelenchus tenebrosus	**	*	*	*	*	*
Maurea punctulata					*	
Umbonium zelandicum				*	*	
Littorina unifasciatum antipodum			***			
Maoricolpus roseus	***	**		*	*	
Zeacumantus lutulentus	*					
Sigapatella novaezelandiae		*			*	
Maoricrypta monoxyla		*			*	
Zegalerus tenuis	*	*			*	
Struthiolaria papulosa	*			*	*	
Struthiolaria vermis		*			*	
Tanea zelandica				*		
Xenophalium pyrum						*
Charonia lampas capax						*
Xymene plebeius		*		*		
Neothais orbita					*	
Haustrum haustorium					*	
Lepsiella scobina					*	
Austrofusus glans		*			*	
Cominella adspersa	*			*	*	
Cominella glandiformis	*	*	*	*	*	
Cominella maculosa					*	
Amalda australis	*					
Amalda depressa	*					
Alcithoe swainsoni		*				

... contd...

	Rabbit Island	Tahunanui	Motueka	Collingwood	Parapara	Farewell Spit
Alcithoe arabica					*	
Pervicacia tristis	*					
Pervicacia propelevis	*					
Neoguraleus sinclairi	*					
Haminoea zelandiae			*			
Amphibola crenata	**	**	*		*	
Siphonaria zelandica					*	
Bivalves						
Nucula hartvigiana	*				*	
Glycymeris modesta	***			*		
Atrina zelandica	*	*		*	*	*
Mytilus edulis aoteanus		*	*		*	*
Perna canaliculus	*		**	*	*	*
Aulacomya ater maoriana		*			*	*
Modiolus aerolatus					*	*
Xenostrobus pulex	*	*			*	*
Modiolarca impacta	*	*			*	
Ostrea lutaria	*			*	*	
Pecten novaezelandiae	*	*	*	*	*	
Chlamys zelandiae	*	*			*	*
Monia zelandica		*			*	*
Venericardia purpurata		*				
Divaricella huttoniana				*	*	
Dosinia anus	**	**		*	**	*
Dosinia subrosea	**	**			**	
Dosina zelandica					*	
Tawera spissa		**		*	*	*
Bassina yatei	*				*	
Chione stutchburyi	***	*	***	***	**	*
Notopaphia elegans					*	
Protothaca crassicosta					*	
Venerupis largillierti		*			*	
Paphies subtriangulata	**	**		**	**	**
Paphies australis	**	**	*	***	**	*
Mactra discors	**				*	
Mactra murchisoni	**					
Mactra ovata	**				*	
Spisula aequilateralis		*				*
Zenatia acinaces				*	*	
Resania lanceolata	*	*			**	
Gari stangeri		*			*	
Gari lineolata	**	*		*	**	
Soletellina nitida	*	**			**	
Tellina huttoni	*					
Tellina gaimardi	***	*			**	*
Tellina liliana	*	*	*	**	**	
Zearcopagia disculus					*	
Anchomasa similis		*			*	
Panopea zelandica		*				
Myadora striata	*	**		*		
Myaroda boltoni		*				
Cephalopods						
Spirula spirula						**

ISLAND BAY FIELD TRIPS

By Mrs J Griffiths

The recent outings to Island Bay during September and October were, I am sure, enjoyed by all present, and it was certainly good to see the numbers present on Saturday 27 September. The weather was good and with little wind present we were able to take full advantage of the low tide at approximately one o'clock, and with this at 0.1 metre it was as good a day as Wellington Harbour offers the average collector.

The following are the species of shells collected or sighted, and although there obviously would be other species present in the locality this represents a good list for the amateur collector to aim at, perhaps on a first visit to the area under conditions similar to those we experienced.

Ischnochiton maorianus Iredale
Eudoxochiton nobilis Gray
Amaurochiton glaucus Gray
Sypharochiton pelliserpentis Quoy & Gaimard
Sypharochiton sinclairi Gray
Onithochiton neglectus Rochebrune
Cryptoconchus porosus Burrow
Haliotis iris Gmelin
Haliotis australis Gmelin
Cellana denticulata Martyn
Cellana radians Gmelin
Cellana stellifera Gmelin
Radiacmea inconspicua Gray
Patelloida corticata Hutton
Notoacmea daedala Suter
Atalacmea fragilis Sowerby
Herpetopoma bella Hutton
Diloma arida Finlay
Micrelenchus dilatatus Sowerby
Thoristella chathamensis cookiana Powell
Turbo smaragdus Gmelin
Turbo granosus Martyn
Littorina unifasciata antipodum Philippi
Rissoina chathamensis Hutton
Cominella maculosa Martyn
Marginella cairoma Brookes
Siphonaria zelandica Quoy & Gaimard
Bemhamina obliquata Sowerby

Nucula hartvigiana Pfeiffer
Borniola reniformis Suter

* * *

SHELL COLLECTING METHODS, AND THE CLEANING AND PRESERVATION OF SHELLS

By Dr F M Climo

A. SHELL COLLECTING METHODS

I. MARINE AND FRESHWATER

a. Direct Method. Based on visual location of specimens such as beach-washed shells, examination of rock surfaces and the under-surface of boulders, or tracking sign on sandy shores. I have been quoted as "thinking like a snail" and the statement is not quite as silly as it looks. With reference to shell collecting the statement really means knowing where to look for what you are after and to recognise the signs offered. A Toheroa indicates its presence by differences in sand texture and/or dimples in the sand surface, other bivalves can be detected in sand covered by shallow water by visual detection of the siphons, the tracks of burrowing opistho-branchs and turrids can be detected in pools on Zostera (Eel Grass) flats, at low tide the presence of live high-and-dry olives is indicated by small bumps on the sand with a slit-like depression in the top, and etc. The accumulation of ecological information and visual "sign" ("spore") should be an inherent and fascinating aspect of shell-collecting. Anyone can collect stamps. Granted, the "stamps" are aesthetically beautiful objects, but they should also be visual stimuli bringing to mind collecting experiences, ecological information and comparative thoughts on the ecology of related species.

Some more unusual collecting habitats that may not have crossed the mind of some collectors are:

i Kelp hold-fasts. Quite often rich in adhering brachio-pods, chitons, Siphonaria australis. Always examine beach-washed holdfasts. Without scuba gear it is usually impossible or downright dangerous to sample this microhabitat in situ.

ii Always examine soft rock in intertidal clean-water habitats, particularly around the edges of pools. Burrowing mytilids and pholads and the secondary occupiers of these burrows could always be present. There are also commensal bivalves adhering to the siphon of Anchomasa similis.

iii Examine sponges cast ashore - they quite often contain a Chlamys kernel.

iv Examine the tubes of polychaete worms which form this structure by adhering sand-grains and debris to a cartilaginous skin. The polychaete often cements difficult to collect small molluscs to the tubes.

v Ship-worms are molluscs! Always examine intertidal wood for these specialised molluscs - there is an undescribed species in the Wellington area.

b. Various Hand Sampling Methods. Four methods can be considered:

i Hand-net-sweeping. Particularly rewarding in Zostera growing in muddy channels. Neoguraleus can be collected in this manner as well as the scapha form of Notoacmea helmsi, the common Bubble Shell and small trochids.

ii Bulk collection of shell-grit, for sorting at a later date. It is much more efficient to take a sample of grit and sort it at home in comfort and good light than to crouch in an awkward position in the field in an attempt to find good specimens. Shell-grit is best collected near low tide mark for good results, particularly near rocks or between and under rocks. Shell-grit is often rich in eatoniellids, rissoinids, rissoids, epitoniids, pyramidellids, and numbers of minute bivalves. People wishing to take this aspect of shell collecting seriously, which deals with minute molluscs, should be equipped with a hand lens.

iii Hand Sieving. Nothing more than a piece of fine netting supported on a hoop of wire is required as equipment. One can get sophisticated with banks of sieves but they are only elaborations of the basic equipment. Put handfuls of sediment (e.g. bottom of rock pools, round the edges of Zostera clumps near low water) in the sieve and shake in the water. I find this the most efficient way to collect Nucula dunedinensis and it is an additional way of collecting Neoguraleus.

iv Seaweed-washing. A large number of small gastropods, and some bivalves, live on or feed on seaweeds. Quite often the only way to get good live specimens of these species (some eatoniellids, Incisura lytteltonensis etc.) is by seaweed washing. I find that rinsing the alga in a bucket of fresh water for about a minute releases most organisms. Molluscs are generally a small percentage of total animal numbers - amphipods, isopods, mites, polychaete worms etc. being most abundant. Do not go mad and strip whole patches of algae from the rocks - this technique of obtaining molluscs is an irreversible trip for the alga. Please, if you can help it, do not waste the other organisms so collected - always preserve them in either meths or formalin and pass them on to somebody with a reference spirit collection (e.g. National Museum, in the Wellington area).

c. Baiting Method: Essentially the technique used for catching crayfish. Using animal bait this is a handy method of collecting carnivores. Hermit Crab inhabited Xenophalium royanum gets into cray-pots around Northland. A small baited pot lowered off a wharf, or set on a float off shore, should gather in at least Cominella. The advantage of this technique over collecting common species intertidally is the fact that sub-littoral specimens are usually less eroded and are often larger.

d. Light Attraction. Not a technique used much by the average shell collector, but no reason why not. All the equipment needed is a kero lantern, a length of rope, a dip net and a convenient wharf. Dangle the lantern just above the water level and sit back with dip net poised over the cone of light on the water surface.

Even if you don't collect anything it is a very rewarding experience watching small fish, cephalopods and crustacea darting about - these organisms always seem more impressive in the water than out.

e. Night collecting. Some molluscs (e.g. Penion) are only active in shallow water after dark. At Kaikoura they come out onto emergent rock surfaces to feed at night. They are buried in sand in channels between rocks during the day. I should imagine a meander around the rocky shores of Pauatahanui Harbour on a still night with a lantern (at low tide) would be very rewarding.

f. Heavy Gear Techniques. Most collectors are familiar with oyster dredges and bottom-trawls (for commercial exploitation of fish, crustacea and molluscs) but very few get the opportunity to participate in the activity. For those fortunate enough to have examined a net full of surprises as it cascades onto the stern sorting tray do not need me to tell them what an exciting experience it is. Most collectors, either by arrangement or a complex barter system, can obtain specimens so collected from patient fishermen or the patient contacts of these men.

Some fish-and-chip shops get their oysters from Foveaux Strait unopened. Try to locate one of these gold mines - empty shells full of sediment contain a surprising amount of material and uncommon chitons can be had in this manner.

Scientific institutions usually use scaled-down models of dredges and nets for the reason Dr Beu gave in an earlier lecture this year. The amount of material dredged up has to be sorted before the next load comes aboard - fishermen do not have to worry about the "rubbish" which is usually shovelled directly overboard, unless they are on the lookout for some fortunate.

II. LAND SNAILS

a. Direct Visual Collecting. Any patch of native bush or other natural vegetation (e.g. tussock tops; coastal flax) contains land snails, native in the main, but there are a number of introduced species near built-up areas. Paryphanta, Wainuia, Rhytida and the larger phenacohelicinid snails are relatively easy to collect if one knows where to look. Paryphanta lives in colonies and once the colony is located specimens can usually be found. Do not collect live specimens, the genus is becoming extinct in N.Z. fast enough as it is. The other paryphantids are not colonial but can usually be found in ones and twos if enough logs are turned over and enough litter is scratched through in the right microhabitats. Knowing the right place to look comes with experience, when one begins "to think like a snail".

Minute land snails are very common in leaf-litter and under logs and can be collected easily with a pair of forceps, the specimens popped into a small glass tube. Their collection requires the sprawled elbows and knees "stance", sharp eyes, and not too much pressure on the forceps (use fine watchmaker's forceps if obtainable). With time certain types of vegetation and topography etc. become indicators of certain groups of species.

Three ways of treating bulk samples of litter for the extraction of minute land snails are now considered. I prefer to collect specimens in situ and only collect litter samples for insurance in case I've missed the most minute (down to 1.5mm) species. Litter samples would also be taken if no time was available for on-site collecting.

b. Direct sorting on newspaper under good light.

c. Burlese Funnel "dehydration-sorting". This funnel is an inverted hollow pyramid with a wire floor across its centre, a hole in the bottom, and a special lid on the top. The lid is fitted with low-power electric bulb/s which dehydrate the litter from the top down. Animals dependent upon moisture for a comfortable existence retreat as the moisture table retreats downwards and fall through the gauze when they run out of litter. The hole at the bottom of the funnel opens into a container full of preservative. This system, ideal for insects, works for land snails but snails tend to play the waiting game, rather than the tactical retreat. They tend to withdraw into their shells, form an epiphragm, sit tight and wait for the moisture to arrive again.

d. The Wet Sack Technique. Put leaf litter in a box and drape a wet sack over the top of the litter. Keep the sack damp. A very humid atmosphere develops between the sack and the litter and the snails after wandering about at night rest-up on the sack. This technique was used by Mr C O'Connor, the vigorous Paryphanta collector of the late 1930s and 1940s.

Now, some other land snail collecting techniques:

e. Pit-traps. Jam tins set in the ground with their open tops flush with the ground surface and with a little preservative in the bottom. This technique is usually used for collecting ground beetles but does also trap snails.

f. Beating-sheet Technique. Many species of snail, particularly members of the subfamily Punctinae (Punctidae) live on foliage and can only be collected in any quantity by this method. A beating-sheet is a square of calico etc. about 2 ft 6 in wide supported on a wooden frame of the designer's choice. They can be made to fold up, fitting conveniently into a Mountain Mule. If it's worth tramping miles to collect snails it is certainly worth carrying a beating-sheet. To collect specimens, flap the foliage onto the sheet, move to a reasonably lighted area and examine. The most fruitful types of foliage in my experience are soft ferns and kie kie though most low shrubby vegetation in damp habitats have temporary or nearly permanent arboreal dwellers.

g. Baiting Techniques. The use of toxic or non-toxic baits set in litter known to contain land snails does work and concentrates some species. I do not approve of poison baits, even for the control of pests - poison has a nasty habit of permeating further into the ecosystem food-web than originally intended.

h. Night Collecting. The examination of foliage etc. by lantern light at night is a "must" if one wishes to collect athoracophorid (native veined) slugs in any quantity. These animals are holed up during the day in leaf-axils (e.g. nikau) or under logs. I was introduced to this common entomological field technique whilst on

the Three Kings Islands in November 1970 and it was an eye-opener to me. Athoracophorids are extremely susceptible to dehydration and move about mainly at night when the air is cool and moist. They can be collected during the day in the open if one wishes to wander about in pouring rain.

i. Methods of Sampling Extinct Populations. From a chemical point of view the sampling of subfossil populations can be divided into two categories. (In these notes I don't go into techniques of collecting and cleaning fossils):

(a) Acidic deposits: The calcium carbonate components of the shells are leached away due to decomposition of lime, leaving the periostracum. Paryphanta are preserved in peat in many places in N.Z. in this form. This is the rarest type of subfossil remain. Such collapsed Paryphanta can be brought back to almost life condition by warming gently in water and gradually stuffing the then malleable shell with cotton wool.

(b) Alkaline deposits or those not prone to leaching: Into this category fall limestone topography deposits (caves, rock-shelters), sand-dunes (e.g. Placostylus and others in N. Northland) and lime-rich swamp deposits (e.g. Pyramid Valley, Canterbury).

Subfossil material in cave matrix is easiest extracted by at first drying the matrix (allowing water, if present, to leave the shell vortex), then, stirring the matrix into a bowl of water. Most snails float to the surface and can be scooped off, in theory, the more dense matrix sinking to the bottom. The technique works better for some matrices than others and the specialist in this field of caving activity devises his own techniques by trial and error.

B. CLEANING SHELLS

This is a section of these notes which does not warrant great space for the following reason. The "purist" keeps his specimen as collected (with few exceptions where the notes that follow may be useful) and waits his opportunity to obtain better (cleaner) specimens. Many specimens that are collected and need cleaning should never have been collected in the first place. Leave eroded or lime-covered specimens to breed, unless they are the only ones available. Dredged rarities are probably the only shells that should be cleaned up if lime-covered.

Included in this section are techniques for removing the animal, which is not really "cleaning", unless the collector is not familiar with what follows and is presented with a beautiful hollow spiral filled with vile, brown, pulsating liquid!

a. Small Shells. Soak for a couple of days in meths (never use formalin for preserving shells unless it is neutralized; non-treated formalin is acidic and erodes and dulls shell), then, remove and dry. The dehydrating effect of meths on animal tissue leaves virtually dry connective tissue once the shell interior is dry. With luck this won't smell. Remember that small beetles love dried shell animals and their droppings in a cabinet look terrible - keep blocks of insecticide in all drawers, particularly those with shells containing dried animals.

b. Large Shells. Treat initially as above - the time required to dehydrate the animal and form a loose fit in the shell vortex will depend upon the strength of the solution and the size of the animal. Meths also has the advantage of hardening up the apical digestive gland which, in boiled specimens, is soft and usually remains in the shell to smell at a future date. Try and hook this out when the rest of the animal is removed, by rotating the shell off the animal rather than pulling on the animal.

c. Boiling. Reasonably efficient but dulls shell lustre, tends to crack nacreous parts, and as mentioned above does not sufficiently harden the digestive gland - the latter can always be treated separately with meths but if you do this you might as well have started with meths.

d. Leave to rot - then hose out with high pressure stream of water. O.K. if you can stand the smell, tolerate organic acid stains on the shell aperture and the potential danger of getting hit in the eye by an unsavoury squirt.

e. Removal by Marine Organisms. This is most efficient and has the advantage that no chemicals (artificial or those of putrefaction) are added to the shell surface. Suspend off a wharf or weight down in a rock pool a gauze mesh containing the specimens. Sea-lice (isopods) will do the rest. Only difficulty in populated areas is that other people may uplift your cache!

Now, removal of lime.
The only satisfactory method is to let the specimen dry and then pick off the calcareous alga or bryozoan with dental picks or a scalpel.

Jewellers and ornament-makers sometimes wish to expose the glossy nacreous layers of shell for display purposes. This is a completely unnatural shell condition and its exposure is not normally a malacologist's pastime.

C. THE PRESERVATION OF SHELLS

Meths is all many people can get hold of for preserving animals, but there are many better chemicals. The animal is important here, the shell is second in importance. Formalin or ethyl alcohol are used frequently for the purpose. The shell spires should be smashed on large specimens to allow the preservative to adequately permeate the soft digestive gland. 70% to a maximum of 90% ethyl alcohol is ideal; 95% dries specimens and they become brittle. Isopropyl alcohol 40-70% is a good substitute if ethyl alcohol is not available.

It is sometimes necessary to recondition dried out specimens. The usual recommended procedure is to boil in trisodium phosphate (or some other wetting agent). Boiling in 85% ethyl alcohol serves much the same purpose. Do not boil in NaOH or KOH as it swells and warps soft parts.

Dissected parts of animals should be stored with the animal in the same vial, placed in a microvial plugged with cotton wool.

It is sometimes desirable to preserve molluscs (particularly gastropods) in extended life positions. A narcotizing agent (e.g. nicotine) should be added drop by drop to the container

holding the live specimen. When relaxed, and not responding to gentle prodding, preservation can be carried out. Land snails are easier than marine gastropods to get to an extended state. Sealing them in a container of water (ideally distilled) for 12 hours does the trick. They expire (suffocate) in an expanded condition.

If microtome sections are required of a given specimen it should first be fixed in Bouins Solution before transference to preservative.

Formalin, ethyl alcohol, isopropyl alcohol and meths have the disadvantage of removing colour from the specimens. This is particularly annoying when soft-bodied, colourful opisthobranchs are preserved. A method around this problem is as follows:

i narcotize the specimen in expanded condition

ii fix for a short while in preserving-strength formalin or weak ethyl alcohol (an hour for small specimens; overnight for larger specimens). This short immersion should not remove too much colour.

iii transfer to monoethylene glycol or some closely related compound. M.g. does not leach colour from specimens but has to be diluted with water to about the osmotic pressure of the animal or it either dehydrates them or blows them up. Once again, trial and error will eventually get good results (in theory).

These notes by no means exhaust collecting tricks and techniques. I've not been around long enough to have picked them all up and personal intuition devises new ones all the time.

* * *

BOOK REVIEW **"Mitre Shells From the Pacific and Indian Oceans"** by P Pechar, C Prior and B Parkinson. Published by Robert Brown and Associates, Australia, 1980

This new book supplies one of the needs of collectors - coloured illustrations not only of species but also of variations within species. This is particularly helpful to the amateur who is often misled by what are in fact only minor variations in a group where there is difficulty for him to distinguish what the experts recognise as valid species. In the Mitridae there are many very similar species, and here we have a book that greatly helps the amateur to correctly name his specimens.

A considerable number of species of Mitridae and Costellariidae are illustrated in colour for the first time.

In their "acknowledgements" the authors express their thanks to Mr W O Cernohorsky of Auckland for checking the accuracy of the text and identifications, and this to readers must give emphasis to the value of the book as a reference volume. Cernohorsky's classifications of the families have been followed.

This book is a must for anyone interested in collecting tropical shells.

. o O o .